

PROJECT NUMBER: 1704
PROJECT TITLE: Supercritical Fluid Processes
PROJECT LEADER: T. M. Howell
PERIOD COVERED: April, 1989

I. LOW NICOTINE

A. Objective: Develop second generation processing for ART.

B. Results: The eighteen extraction runs to produce enough filler for machine made cigarettes have been completed. One pound of extracted filler was produced using stems as absorber, one pound using carbon as absorber and one pound using water as absorber. Nicotine removal was 95%, 96% and 97% respectively using standard conditions of 3% AB and 200 M/M. Preliminary subjective evaluation indicates parity between stem extracted and water extracted while the carbon extracted was noticeably different. The final report is being prepared. Chemical analyses of the filler and absorbers are pending.

Improvements to the laboratory water absorber unit, specifically the addition of a view cell as a de-misting volume which allowed for increased flow rate, resulted in obtaining 97% extraction of nicotine at 150 M/M using 3% AB. Reduction of AB addition to 2.2% gave 96% nicotine extraction at 200 M/M. Future runs will be made in order to evaluate the effects of other process parameters on the extraction using water as absorber.

C. Plans: Work is on going.

II. LOW NICOTINE

A. Objective: Support to ART commercial plant.

B. Results: It was previously reported that the presence of oxygen in water containing chlorides enhanced the probability of stress corrosion cracking in 316 stainless steel. The chances were reduced if the level of oxygen was reduced to 0.01 ppm or lower in the water phase. Since any free water present in the system is likely to contain tobacco solubles a plan was developed to determine how they affected the distribution of oxygen between carbon dioxide and water. Samples from the BHPP have been taken and water extracts of filler and stems were obtained to be used as the test liquor. An oxygen analyzer was received and is currently being calibrated.

C. Plans: Work is on-going.

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